freely move about, whereas when it is cold and rigid such freedom of movement is impossible; in consequence the definite formation of crystals cannot take place, and the result of the change is different. What happens is this. In the first place, molecules of the same kind tend to separate out from the homogeneous mixture and collect round a point, forming a centre of decomposition. Proceeding from this centre the glass is found decomposing into definite compounds in an ever-enlarging circle until it reaches a point at which the strain set up in the glass by this molecular movement results in a crack forming round the area of decomposition, and then the whole mass comes away, leaving behind it a little hole or pit in the surface of the glass.

Such are the two forces at work on the decay of glass—corrosion without and decomposition within—and, of course, they act simultaneously. As the pits are formed they are extended by corrosion, forming a resting place, in fact, for the water, until eventually the whole fabric of the glass is destroyed.

According to varying circumstances—the position of the window as affecting its degree of exposure, the climate in which it is placed, differences in composition and mechanical state of the glass—we get all sorts of variations in the precise effect of decay in particular instances.

It is a well recognised fact that glass containing a large proportion of earths, that is, lime, magnesia, and alumina, is especially liable to become crystalline. If, then, one is correct in thinking that the peculiar pitting of Gothic glass is due to a similar change of constitution, one would expect to find it excessively rich in these constituents, and we have already seen that this is, in fact, the case.

On the other hand, glass containing excess of alkali has an equally recognised tendency to go "blind," that is, to become covered with a film, due to corrosion. Finally, glass with a high content of silica, with earth and alkali equally balanced, may be looked upon as highly resistant in both directions. It is such glasses which decay slowly and with little tendency to devitrification, the surface being merely etched by corrosion, leaving the large proportion of silica in a coherent thin film, producing gorgeous effects of iridescence.

Besides the glass itself, a study of the materials used for producing the enamel with which the glass was painted to represent figures and subjects is a matter of some importance, which is fully discussed in the paper. After going thoroughly into the evidence afforded by those mediæval pay-rolls which have been preserved, dealing with the execution of stained-glass windows, the author comes to the conclusion that the enamel in question was prepared by making a fusible opaque black glass, technically known as "geet," probably because it resembled jet in appearance (the word jet being in writings of the period variously spelt jeat, ieat, geat, geet); this material would be used as a flux, and mixed with the oxides of iron and copper to make the paint. Experiment shows that an enamel prepared in this way is in every respect similar to that used in the finest examples of mediæval stained glass.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

An exhibition illustrating a course of lectures on Japanese education given under the auspices of the University of London by Baron Kikuchi, will be opened on Tuesday next at the Victoria and Albert Museum (Indian Section), South Kensington. The exhibition will remain open until the end of June.

Recent statistics published by the French Minister of Public Instruction give the number of students attending courses of instruction in French universities and higher educational institutions. The total reaches 38,197, of whom 3434 are foreigners—a number much larger than usual owing to the temporary closing of certain Russian universities. Of the native students, 1364 are women. The number of students at some of the larger universities are as follows:—Paris, 15,789; Lyons, 2783; Toulouse, 2675; Bordeaux, 2496; Nancy, 1841; Montpellier, 1752; Lille, 1560; Rennes, 1498; and Aix-Marseilles, 1269. The Paris students are distributed among the different faculties and schools as follows:—law, 7032; medicine, 3369; letters, 2413; science, 2022; and pharmacy, 953. The total number of French university men students include in the various departments of learning:—law, 15,427; medicine, 7501; letters, 4605; science, 5881; and pharmacy, 2224.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 15, 1906.—"On the Effect of High Temperatures on Radium Emanation and its Products." By Walter **Makower** and Sidney **Russ**. Communicated by Prof. A. Schuster, F.R.S.

In a previous paper it was shown that the activity of radium emanation sealed in a quartz tube is temporarily changed by subjecting it for a short time to temperatures between 1000° C. and 1200° C. From the results obtained it seemed probable that this change was not due to any alteration of the emanation itself, but rather to a change of activity of one of the more quickly decaying products of the emanation with which it is in equilibrium. To settle this point measurements were made of the rate of decay of the emanation when kept at 1100° C. Subsequently experiments were made on the effect of high temperatures on the active deposit collected on a platinum wire by exposure to the emanation.

The results obtained were:—

(1) The change in activity noticed when radium emanation is subjected to a high temperature is not due to any alteration in the emanation itself, since its time period is unaltered when it is maintained at a temperature of 1100° C.

(2) The change is due *either* to a change in radium B *or* C, since the activity of a mixture of these two substances can be changed by heating.

(3) The change is *probably* due to some influence of temperature on radium C. This conclusion is in agreement with the statement made by Curie and Danne.

In a note the authors discuss some recent observations made by Dr. Bronson which appear at first sight difficult to reconcile with the above conclusions. As a result of his experiments, Dr. Bronson concludes that there is no change of activity in radium even when exposed to temperatures of 1600° C.

It is, however, pointed out by the authors that there are several important differences between Dr. Bronson's experiments and their own, the most important of which is that Dr. Bronson measured the activity of the radium while hot, whereas they always allowed the active deposit to cool before making measurements. It is on this account that the authors consider that the results of Dr. Bronson and their own are not necessarily contradictory.

Zoological Society, April 9.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—A collection of fishes made in the eastern watershed of the Transvaal by Captain G. E. Bruce, and presented to the British Museum: G. A. **Boulenger**. The collection contained specimens of eighteen species, of which several had not been previously recorded from the Transvaal, and five were new.—The osteology of the oligomyodian and diacromyodian Passeres: W. P. **Pycraft**. After referring to his previous contribution (published in the Proceedings) on the osteology of the eurylæmid and tracheophone Passeres, the author remarked that there seemed little room for doubt but that the diacromyodian and oligomyodian Passeres must be regarded as divergent branches of a common stem. The latter suborder included the Tyranniformes, Phytotomidæ, and Pittidæ, while the former embraced the remaining Passeres. In the present communication some fourteen families were described, and these were divided into four groups, Hirundines, Muscicapæ, Laniinæ, and Gymnorhinæ. This arrangement was based, not on osteological characters alone, but also on the evidence of pterylosis and certain wing-muscles. The author proposed to include the Vireonidæ with the Muscicapæ, and the Vireolaniidæ with the Gymnorhinæ. With this last group he proposed, tentatively at any rate, to include the Paradiseidæ, inasmuch as there seemed good reason for continuing to regard these birds as near allies of the Corvidæ.—Anatomy of a Bornean frog of the genus Megalophrys, with references to other genera of Batrachia: F. E. **Beddard.**—The winter habits of the greater horseshoe and other cave-haunting bats: T. A. **Coward.** This paper contained the results of observations made in the Somersetshire caverns, where at the end of December and beginning of January the author found that the bats were not in profound sleep, but moved in the caves and went into the open for food. This food, the author showed, was not all taken when the bats were in flight, but was usually devoured when the bats were at rest. The manner of feeding was described, and information supplied about the food of the greater horseshoe and the parasites which infested this species and the lesser horseshoe.

Anthropological Institute, April 16.—Mr. A. L. Lewis, vice-president, in the chair.—*Exhibit.*—A selection of specimens of flint from Cornwall: Mr. **Lewis,** Mr. **Warren,** Mr. **Kendall,** and Mr. **Chandler.**—Note on some Palæolithic and Neolithic implements from East Lincolnshire: S. Hazzledine **Warren.** The Neolithic implements described were found by the author *in situ* in an undisturbed section of the fen deposit of the East Lincolnshire coast near Skegness. The lowest bed seen in the district was Boulder-clay; overlying this there are patches of fluviatile gravel; above this, again, comes the old surface soil of the buried forest; then the peat by which the forest was destroyed, and above this, again, a succession of warp clays with some subordinate peat beds. The exact horizon at which the Neolithic implements occurred was in the old surface soil beneath the lowest peat bed. Besides the neoliths, the author also found a palæolith *in situ* in one of the patches of fluviatile drift gravel between the submerged forest above and the Boulder-clay below. One or two other palæoliths were also found which had evidently been derived from one of these patches of post-Glacial drift. Apart from discoveries in caves, this is the most northerly point at which Palæolithic implements have yet been found in this country in any river drift gravel.

Geological Society, April 17.—Sir Archibald Geikie, Sec.R.S., president, in the chair.—The toadstones of Derbyshire, their field-relations and petrography: H. H. **Arnold-Bemrose.** The district over which the toadstones are seen may be divided into three main areas of volcanic activity, between which there are no exposures of igneous rock:—(1) the north-western or Miller's Dale area; (2) the south-eastern or Matlock area; (3) the south-western or Tissington area. In each of these areas there are lava-flows, bedded tuffs, and volcanic vents, and in the Miller's Dale and Matlock areas several intrusive sills. In the Miller's Dale and Matlock areas the igneous rocks are, with the exception of the Hopton vent, entirely in the Mountain Limestone, but in the third area they are mostly in the Yoredale Shales, and lava plays only a subordinate part. In the Miller's-Dale area the upper lava is the thicker, and extends over a greater district than the lower, while in the Matlock area the converse is true. In the former area the lavas are separated by about 150 feet of limestone, in the latter by about 80 feet to 100 feet. The upper lava of Miller's Dale is on a lower horizon than the lower lava of Matlock, and the limestone above it contains at least two bands of interbedded tuff. The lavas are vesicular and amygdaloidal in structure, and often very much decomposed. They contain olivine, augite, and felspars, magnetite, and iron-oxide; the felspars are often present in two generations. The sills are, for the most part, ophitic olivine-dolerites, and pass from a very coarse-grained dolerite through the intervening stages into a fine-grained dolerite or basalt; they are similar in structure to certain Tertiary dolerites. The toadstones have all been mapped on the 6-inch scale, and petrological accounts of the different rocks are furnished.—Data bearing on the age of Niagara Falls: Prof. J. W. W. **Spencer.** The author has been engaged in investigations for a monograph on Niagara Falls, to be published by the Geological Survey of Canada. Soundings at all the points of great changes in the gorge have been successfully undertaken; borings were put down for the exploration of buried valleys, and instrumental surveys made of the original river-banks and the physics of the stream. The mean recession of the crest-line of the falls is found to be 4·2 feet a year under existing conditions, and this rate has approximately obtained for 227 years. But this rate will not give the age of the falls, on account of former great variations in the volume of the river and in the height of the falls themselves. The chief change in volume of water depends on the fact that originally Lake Erie alone was discharged over the falls, when the supply of water was only 15 per cent. of the present discharge. Lake Ontario, too, stood at a higher level, and thus the cutting-back from Queenstown to Foster's Flats was effected with a small water discharge and, at first, a low head. After an uplift, which raised the crest of the fall considerably above Lake Ontario, a slight depression followed which "drowned" part of the lower gorge. This cutting is calculated to have taken 35,500 years for a distance of 14,400 feet. Above Foster's Flats the sudden widening indicates the inflow of the other lakes into Erie, greater water discharge, and greatly increased rapidity of recession. The changes in height of the falls and resistance of the rocks are examined in detail, and the small influence of pre-Glacial filled channels estimated. The whirlpool is on the site where the recession broke down the partition separating the head of the Whirlpool-St. David's buried gorge, and began to empty out the contents of this valley. The cutting with the full power of the water of the four lakes varied at times according to the height of the fall, and is calculated to have occupied only 3500 years for the cutting-back of about four miles above the head of Foster's Flats. Thus the entire age of the falls is given as 39,000 years.

Royal Meteorological Society, April 17.—Dr. H. R. Mill, president, in the chair.—Phenomenal rainfall in Suva, Fiji, August 8, 1906: R. L. **Holmes.** This is an account of a very remarkable fall of rain which occurred during a thunderstorm at Suva, the capital of Fiji, on the night of August 8. Unfortunately, the exact amount had to be, in part, estimated, owing to the observer failing to measure the fall at intervals during the night. Very little rain fell before sunset, but from 6 p.m. it continued a ceaseless downpour until sunrise the next day. At 10 p.m. the assistant found the gauge overflowing with 12·50 inches of rain in it. Four hours later, at 2 a.m. on August 9, the gauge was again overflowing, and at 6 a.m. it was overflowing once more, that is, three times in twelve hours. Very little rain fell after 6 a.m. These measurements show more than 37 inches, without taking into account the overflowings, which are an unknown quantity. As the gauge was 25 feet above the ground, Mr. Holmes is of opinion that the rainfall should be increased by about 11 per cent., so that the total fall must have been fully 41 inches in about thirteen hours, which he thinks surpasses anything that has been recorded in any other part of the world in so short a space of time.—Temperature around the British Islands in relation to the Gulf Stream: R. **Strachan.** This paper was based on observations made in the year 1906 which have been published by the Meteorological Office. Around the British coasts the temperature of the air was lowest in February and highest in August; the temperature of the sea corresponded to these epochs with slight interruptions, having been lowest in January for the west and central, in March for the south, and highest in September for the north and in July for the east, positions. The water in the Strait of Florida was about 30° warmer than the sea at the north of Scotland.—Weather regarded as a function of climate: L. C. W. **Bonacina.**

MANCHESTER.

Literary and Philosophical Society, March 12.—Prof. W. Boyd Dawkins, F.R.S., in the chair.—The occurrence and significance of symbiotic corpuscles in the lower animals: Dr. F. W. **Gamble** and Dr. F. **Keeble.** The paper described the occurrence of symbiotic coloured corpuscles in the bodies of lower animals. It dealt in detail with a single case, that of the simple turbellarian worm

Convoluta roscoffensis, and discussed the evidence for describing the green cells of the animals as an "infection" by a flagellated vegetal organism. The nature and life-history of this organism were described, and the significance of the association of the organism and of the animal Convoluta was discussed.—Bones of the great auk from Funk Island, Newfoundland: F. **Nicholson.** The bones exhibited were those of the now probably extinct species of bird, the great auk, or gare-fowl, *Alca impennis* of Linnæus. There were seven bones in this collection, consisting of:—one base of skull, one clavicle, one sacral vertebra, two right humeri, two right tibiæ. The bones have been presented to the Manchester Museum at the Victoria University.

March 26.—Mr. Francis Nicholson in the chair.—An apparent case of gaseous absorption caused by the action of a few milligrams of radium bromide on the sides of a glass tube containing the radium: T. **Thorp.** At first there was an expansion, but later on, as the glass turned purple, a contraction took place to less than the original volume. Further investigations are being made, the results of which will be communicated to the society.—A collection of fishes, batrachians, and reptiles made by Mr. S. A. Neave in Rhodesia, north of the Zambezi, with field notes by the collector: G. A. **Boulenger.** Thirteen species of fish, one of which (*Barilius neavii*) was described as new, seven batrachians, and forty-four reptiles were obtained. The localities, dates of capture, and native names of the various forms were given in the paper.—A new class of organo-metallic compounds. Trimethylplatinimethyl hydroxide and its salts: W. J. **Pope** and S. J. **Peachey.** No alkyl compounds of metals belonging to groups 1 and 8 of the periodic table have hitherto been described. The authors find that the chlorides, or in some cases the oxides, of iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium, and platinum, belonging to group 8, and of gold, belonging to group 1, react vigorously with magnesium methyl iodide. Trimethylplatinimethyl iodide, $(CH_3)_3Pt.I$, is formed by the action of platinic chloride dissolved in ether upon magnesium methyl iodide in ethereal benzene solution; after treating with water and extracting with benzene, the benzene solution yields the new compound on evaporation. On boiling for several hours with silver hydroxide in a moist mixture of benzene and acetone, it is converted into trimethylplatinimethyl hydroxide, $(CH_3)_3Pt.OH$. Trimethylplatinimethyl nitrate, $(CH_3)_3Pt.NO_3$, obtained by dissolving the hydroxide in nitric acid, crystallises in colourless plates, and is freely soluble in water. On adding an alkali chloride to its aqueous solution, trimethylplatinimethyl chloride,

$$(CH_3)_3Pt.Cl,$$

is precipitated. This salt crystallises from chloroform in colourless rhombic dodecahedra belonging to the cubic system. In a similar manner a number of other salts have been prepared, including the bromide and the cyanide; the latter is hydrolysed on heating with caustic potash with evolution of ammonia.

April 9.—Mr. Arthur McDougall in the chair.—Further notes on the adventitious flora of the sandhills of St. Annes-on-the-Sea: C. **Bailey.** The author summarised his observations on the alien plants which had appeared during his five years' residence at St. Annes-on-the-Sea. The number of these aliens was quite worthy of a large ballast-discharging port; altogether between forty and fifty species have occurred, as represented by herbarium examples exhibited at the meeting.

PARIS.

Academy of Sciences, April 22.—M. A. Chauveau in the chair.—Primitive tuberculosis of the lungs and bronchial and mediastinal ganglia communicated to young cattle by the ingestion of tuberculous virus of human origin: A. **Chauveau.** Tubercle of the lungs can arise directly from the ingestion of human tubercle virus by the digestive organs, and this is not necessarily accompanied by tuberculous lesions of the intestines, although such may sometimes be the case.—The earthquakes of April 15, 18, and 19, 1907, recorded at Paris: G. **Bigourdan.** The records of April 15 indicate that the epicentre was at a distance of 8500 kilometres to 9000 kilometres, about the distance from Paris to Mexico. It is known that there was a disastrous earthquake in Mexico on this day.—The direct hydrogenation of the isocyanic esters: Paul **Sabatier** and A. **Mailhe.** The vapours of ethyl isocyanate, carried off in a current of hydrogen in excess, were passed over a column of reduced nickel maintained at 180° C. to 190° C. The gases issuing from the apparatus contained a little ammonia and carbonic acid, but neither methane nor carbon monoxide. The chief product of the reduction was methylethylamine, small quantities of ethylamine, diethylamine, and triethylamine being also present. With phenyl isocyanate a little aniline was obtained, but the main product was diphenylurea.—Concerning the spectroheliograph: G. **Millochau.** On a question of priority as to the use of a second slit by M. Deslandres.—Differential equations of the second order and first degree the general integral of which has fixed critical points: B. **Gambier.**—Equations with reciprocal integrals: C. **Popovici.**—The theorem of Nernst and liquid chains with identical extremities: J. **Guyot.** An extension of the work of Negbauer and Nernst on solutions of binary electrolytes formed of univalent ions to solutions of electrolytes of polyvalent ions. The experimental results are compared with the figures calculated by Planck's method.—Positive light and Melde's experiment: P. **Villard.**—The phosphorescence of the rare earths: J. **de Kowalski** and C. **Garnier.** To the nitrate of calcium or strontium is added a weak solution of the nitrate of the rare earth (praseodymium, neodymium, erbium, or samarium), the whole precipitated as carbonate, and the latter heated to a red heat with sulphur. The proportions of rare earth giving a maximum phosphorescence were determined in each case.—The phosphorescence of manganiferous calcium compounds: L. **Bruninghaus.**—The triboluminescence of substances containing zinc: Adrien **Karl.**—Some complementary observations concerning a property of platinum amalgam discovered by M. Henri Moissan: Paul **Lebeau.** The property of platinum amalgam of forming a stable emulsion seems to be peculiar to that metal. Instead of shaking the amalgam with water, the author used a 5 per cent. solution of gelatin, capable of solidifying on cooling. Sections were taken of the solidified mass with the view of studying its microscopical structure.—Remarks on the constitution of the copper alloys: Léon **Guillet.**—A new silicide of tungsten, Si_2W: Ed. **Defacqz.** The new silicide is formed by the action of amorphous tungsten upon copper silicide (containing 50 per cent. of silicon) at the temperature of the electric furnace; the same compound is obtained by reducing a mixture of tungstic anhydride and silica with aluminium in the presence of sulphur.—The condensation of sodium derivatives of acyloines of the fatty series with acetic esters: L. **Bouveault** and René **Locquin.** The authors have given the name acyloines to compounds of the type

$$R.CH(OH).CO.R.$$

—Ethylidene-imine (aldehyde ammonia) and hexaethylidene-tetra-amine: Marcel **Delépine.** The author has previously given reasons for supposing that aldehyde-ammonia is not $CH_3.CH(OH).NH_2$, as usually supposed, but the hydrate of $(CH_3.CH:NH)_3$. In confirmation of this view the present paper describes the preparation and properties of the trinitroso-derivative.—The detection and estimation of ammonia in monomethylamine and the more volatile fatty amines: Maurice **François.** By the usual method of a Nessler's reagent of defined composition, two parts of ammonium chloride in 1000 of methylamine hydrochloride can be detected with certainty. A quantitative method is developed on this basis.—The composition and analysis of wolfram and hübnerite: Paul **Nicolardot.** A scheme for the rapid analysis of tungsten minerals, permitting of the determination of all the constituents.—The differentiation of the tissues of the stem and frond of Equisetum: C. **Queva.**—The experimental genesis of vital processes: J. **Kunstler.**—Some remarks on the food of the sardine: Casimir **Cépède.**—The functions of the hypophysis and the pineal gland: M. **de Cyon.**

Calcutta.

Asiatic Society of Bengal, April 3.—Specimens illustrating the fauna of certain brackish pools in the delta of the Ganges: Dr. N. **Annandale.** This fauna has become isolated recently, probably within the last half-century, and presents many features of interest. It includes typical fresh-water Entomostraca, as well as two cirripedes (*Balanus amphitrite* and *B. patellaris*), the larvæ of a mosquito (*Anopheles rossii*), numerous fresh-water fish and molluscs, a hydrozoon (*Irene ceylonensis*), and an actinian (*Metridium schillerianum*). The last is probably the most interesting form now occurring in the pools, as it appears to have undergone a very distinct change, both in structure and in habits, since it was described by the late Dr. F. Stolczka thirty-nine years ago.—Note on the absorption of gases, vapours, and substances from solution by solids and amorphous substances: Dr. M. W. **Travers.** In this note attention is directed to the physical character of such phenomena as the absorption of moisture by organic materials. It has usually been considered that such absorption must be attributed either to surface condensation or to solid solution. It appears, however, that substances which absorb gases or vapours are invariably amorphous, and as amorphous substances must be referred to the liquid rather than to the solid phase, the use of the term solid solution is not permissible. It is the author's opinion that such phenomena as the absorption of water vapour by cotton or jute involve the formation of a simple solution, the supposed solid phase consisting really of a substance in the liquid phase, but possessing a high viscosity. The law of distribution in this particular case is exponential instead of linear, but it tends to become linear as the temperature rises.

DIARY OF SOCIETIES.

THURSDAY, May 2.

Royal Society, at 4.—Election of Fellows.—At 4.30.—The Spontaneous Crystallisation of Binary Mixtures. Experiments on Salol and Betol: Prof. H. A. Miers, F.R.S., and Miss F. Isaac.—On the Variation of the Pressure developed during the Explosion of Cordite in Closed Vessels: Prof. C. H. Lees, F.R.S., and J. E. Petavel.—Space described in a Given Time by a Projectile moving in Air: A. Mallock, F.R.S.

Society of Arts, at 4.30.—The Applicability to India of Italian Methods of Utilizing Silt: Sir Edward C. Buck, K.C.S.I.

Linnean Society, at 8.—The Fauna and Flora of Abyssinia compared with Those of West Africa: Prof. E. B. Poulton, F.R.S.—(1) Report on the Marine Biology of the Sudanese Red Sea (Communicated with an Introduction by the President); (2) Formation of the Shone Cliff near Alexandria; (3) Recent History of the Coral Reefs of the North-West Shores of the Red Sea: Cyril Crossland.—Polyplacophora collected by Mr. Cyril Crossland: E. R. Sykes.—On Chelonethi (Pseudoscorpions) from Asia and Australia: C. J. With.—Note on the Function of the Spiracle in certain Elasmobranchs: A. D. Darbishire.—*Exhibits*: (1) Probate of the Will of Richard Anthony Salisbury; (2) Manuscripts of Dr. W. J. Burchell, Presented to the University of Oxford by Francis A. Burchell, Rhodes University College, Grahamstown, Grand-nephew of the Great Naturalist and Explorer: Prof. E. B. Poulton, F.R.S.

Chemical Society, at 8.30.—(1) The Chemical Action of Exradio, Part I., Action on Distilled Water; (2) The Chemical Action of Exradio, Part II., Action on Copper Salts in Solution. Preliminary Note: Sir W. Ramsay.—Freezing Point Curves of the Menthyl Mandelates: A. Findlay and E. M. Hickmans.—The Constitution of Homo-eriodictyol. A Crystalline Substance from Eriodictyon Leaves: F. B. Power and F. Tutin.—The Relation between Valency and Heats of Combustion. Preliminary note: G. Le Bas.

Institution of Electrical Engineers, at 8.—The Use of Wooden Poles for Overhead Power Transmission: C. Wade.

FRIDAY, May 3.

Royal Institution, at 9.—Dexterity and the Bend Sinister: Sir James Crichton-Browne, F.R.S.

Geologists' Association, at 8.—The Igneous Rocks of the Bristol District: Prof. S. H. Reynolds.—The Carboniferous Limestone Sections of Burrington Combe and Cheddar: T. F. Sibly.—Recent Researches in the Lower Carboniferous Rocks: Dr. A. Vaughan.

SATURDAY, May 4.

Royal Institution, at 3.—Scientific Work in the Sea-Fisheries: Prof. W. C. McIntosh, F.R.S.

MONDAY, May 6.

Society of Chemical Industry, at 8.—The Works Chemist as Engineer: O. Guttmann.

TUESDAY, May 7.

Royal Institution, at 3.—Stimulation, Luminous and Chemical: Prof. William Stirling.

Zoological Society, at 8.30.

WEDNESDAY, May 8.

Society of Arts, at 8.—The Production of Coke and its Application in Domestic Fires: Paul Schlicht.

THURSDAY, May 9.

Royal Society, at 4.30.—*Probable Papers*: The Anatomy of the Julianiaceæ considered from the Systematic Point of View: Dr. F. E. Fritsch.—The Ascent of Water in Trees, Second Paper: Prof. A. J. Ewart.—Increase in the Complement-Content of Fresh Blood-Serum: Dr. J. Henderson Smith.

Royal Institution, at 3.—Spectroscopic Phenomena in Stars, (1) Chemistry: H. F. Newall, F.R.S.

Institution of Electrical Engineers, at 8.—Telephonic Transmission Measurements: B. S. Cohen and G. M. Shepherd.

Iron and Steel Institute, at 10.30 a.m.—Presidential Address.—Electrically Driven Reversing Roller-Mills: D. Selby-Bigge.—(1) Steel Making from High Silicon Phosphoric Pig Iron by the Basic Bessemer Process: (2) Steel Making from Pig Iron containing Chromium, Nickel, and Cobalt: A. W. Richards.—The Use of Steam in Gas Producer Practice: Prof. W. A. Bone and R. V. Wheeler.

FRIDAY, May 10.

Royal Institution, at 9.—Recent Excavations on Forum Romanum, and the Forum Ulpium: Signor Com^{e} Giacomo Boni.

Physical Society, at 8.—Stereoscopy with long Base-line illustrated on the Screen: Dr. T. C. Porter

Royal Astronomical Society, at 5.

Malacological Society, at 8.—The Pairing of *Limnaea peugra* with *Planorbis corneus*: W. D. Lang.—Notes on *Achatina denisoni*, Reeve, and *Achatina magnifica*, Pfr.: E. A. Smith.—Review of the New Zealand Acmæidæ, with Descriptions of New Species and Sub-species: Henry Suter.

Iron and Steel Institute, at 10.30 a.m.—Sentinel Pyrometers and their Application to the Heat Treatment of Tool Steel: H. Brearley and F. Colin Moorwood.—Induced Draught with Hot-air Economisers for Steel-Works and Blast-Furnace Boilers: A. J. Capron.—The Influence of Process of Manufacture on Some of the Properties of Steel: F. W. Harbord.—The Distribution of Sulphur in Metal Ingot Moulds: J. Henderson.—The Ageing of Mild Steel: C. E. Stromeyer.—Carbon-Tungsten Steels: T. Swinden.—The Nomenclature of Iron and Steel: Report of a Committee of the International Association for Testing Materials.

SATURDAY, May 11.

Royal Institution, at 3.—Scientific Work in the Sea-Fisheries: Prof. W. C. McIntosh, F.R.S.

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